

REMARKS

Claims 1-16 are pending. By this Amendment, claim 1 is amended. The amendment is supported by the specification and the claims as originally filed. No new matter is added.

Claims 1-3, 6-9 and 11-16 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Abusleme et al. (EP 1,038,914 A1, corresponding to U.S. Patent No. 6,476,150) in view of Stoeppelmann (U.S. Patent No. 5,869,157). The rejection is traversed.

The present invention of claim 1 is directed to “[m]ultilayer manufactured articles comprising at least: A) a layer consisting essentially of thermoprocessable copolymers of ethylene with chlorotrifluoroethylene, and/or tetrafluoroethylene, and with acrylic monomers of formula $\text{CH}_2=\text{CH}-\text{CO}-\text{O}-\text{R}_2$ (a) ...; and B) a layer consisting essentially of polyamides.”

Applicants respectfully submit that this rejection is overcome in view of the amendments to claim 1. Applicants submit that the language “consisting essentially of” in layer “A)” and layer “B)” of claim 1 clearly identifies the technical features required to attain the present technical effect. MPEP § 2111.03 states the following:

The transitional phrase “consisting essentially of” limits the scope of a claim to the specified materials or steps “and those that do not materially affect the basic and novel characteristic(s)” of the claimed invention.

As the Applicants have clearly indicated the “basic and novel characteristics” of the presently claimed invention in the specification and claims, Applicants respectfully submit that the phrase “consisting essentially of” should not be construed as equivalent

to “comprising” (see MPEP § 2111.03). The specification and claims of the presently claimed invention disclose that additional compounds are not required to be present to obtain the advantages of the presently claimed invention or may be present in such small amounts that they are considered impurities.

Applicants respectfully submit that the advantages of the presently claimed invention, such as the high adhesion between the fluoropolymer layer of A), which contains acrylic monomer (a) units, and the layer of polyamide of B), is due to the particular polymer A) and to the particular polymer B). This fact is clearly evidenced by the specification and examples, wherein layer B) made of polyamides having a content of “-NH₂ end groups in the range of 40-300 µg/g” (not admixed with a diamine) (present claim 1 and Examples 1, 3 and 11) adheres directly to a layer A) of E/CTFE (or E/TFE) fluoropolymer containing acrylic monomer (a) units without using diamine or cross-linking agents. Meanwhile, Applicants have found that when an ethylene-chlorotrifluoroethylene (E/CTFE) fluoropolymer does not contain acrylic monomer (a) units, i.e., consists only of E and CTFE monomers (e.g. Halar[®]), the E/CTFE fluoropolymer does not adhere to the common polyamides (see comparative Example 4) or to the presently claimed polyamides (see comparative Examples 5 and 10). Applicants further submit that the same considerations as above can be applied to cross-linking agents.

Accordingly, the presently claimed invention allows for the proper selection of specific polyamides and fluoropolymers which unexpectedly result in the high adhesion between fluorinated and non-fluorinated layers without employing adhesion promoter, cross-linking agents or post-treatment, such as annealing, to assure high adhesion.

Cross-linking agents and diamines (and post-treatment) are to be considered as merely optional components since they are not essential to accomplish the advantages of the presently claimed invention, as the improved adhesion does not require the presence of these components.

In contrast, the cited references require diamine, cross-linking agents or supplemental treatments to achieve adhesion in their multi-layers.

As Abusleme et al. and Stoeppelmann do not teach or suggest the presently claimed invention, Applicants respectfully submit that claim 1 would not have been obvious to those of skill in the art, as it would not have been obvious to use the polyamides of Stoeppelmann, which are unsuitable to adhere to fluoropolymer after co-extrusion, in the multi-layer of Abusleme et al. in replacement of the cross-linking agent. Further, Applicants submit that dependent claims 2-3 and 7-15 are patentable for at least the same reasons.

With regards to independent claim 6 in particular, Applicants respectfully submit that claim 6 is patentable for at least the same reasons as claim 1 (please see the discussion above and the remarks in the August 11, 2004 Amendment).

Further, Stoeppelmann states that “[w]hen PA12 [polyamide] having an excess of amino end groups is employed without any diamine or when PA12 [polyamide] balanced in the amino end groups is utilized together with diamine as an adhesion promoter, then adequate adhesion cannot be achieved directly after the coextrusion process of the respective polymer compounds. In this case, the adhesion is only achieved following annealing at 100°–130°C, or after being stored for several days at room temperature” (Stoeppelmann, column 4, lines 19-16) (emphasis added).

Thus, Stoeppelmann discloses that -NH_2 end groups admixed with diamine or polyamides having an excess of -NH_2 end groups not admixed with diamine, only adhere completely to fluoropolymers after post-treating the co-extruded multilayer, such as annealing at 100-130°C or storage for several days at room temperature.

As such, Stoeppelmann discloses that a post-treatment is necessary to tightly adhere polyamides to fluoropolymers. In contrast, the presently claimed invention does not require any post-treatment to adhere polyamides to a particular fluoropolymer, such as E/CTFE containing acrylic monomer (a).

Accordingly, Applicants submit that the classes of polyamides of Stoeppelmann do not achieve adequate adhesion to fluoropolymer after the coextrusion process (Stoeppelmann, column 3, lines 5-10), as polyamides having an excess of -NH_2 end groups admixed with diamine. In this regard, Applicants have demonstrated in Example 8 that polyamides do not adhere to fluoropolymers that do not contain acrylic monomer (a) (i.e. those fluoropolymers not claimed by "A)" of claim 6). In Example 8, a polyamide having -NH_2 end groups lower than 40 $\mu\text{g/g}$ admixed with diamine adheres to E/CTFE containing acrylic monomers c). In contrast, the same polyamide of Example 8 admixed with diamine does not adhere to E/CTFE not containing acrylic monomer (a) (see Comparative Example 10).

Applicants respectfully submit that Abusleme et al. and Stoeppelmann do not teach or suggest the use of polyamides having balanced -NH_2 end groups admixed with diamine (which Stoeppelmann considers to be unsuitable to adhere tightly to fluoropolymers) as an adhesion promoter for adhering fluoropolymers of E/CTFE containing acrylic monomer (a) to polyamide.

As such, Applicants respectfully submit that the claim 6 would not have been obvious in view of Abusleme et al. and Stoeppelmann. Further, Applicants submit that dependent claim 16 is patentable for at least the same reasons at claim 6.

Thus, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-3, 6-9 and 11-16 under 35 U.S.C. § 103(a) as unpatentable over Abusleme et al. in view of Stoeppelmann.

Claim 10 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Abusleme et al. in view of Stoeppelmann as applied to claim 1, and further in view of Krause et al. (U.S. Patent No. 5,958,532). The rejection is traversed.

Applicants submit that dependent claim 10 is patentable for at least the same reasons as claim 1 (please see the discussion above and the remarks in the August 11, 2004 Amendment). Further, Applicants submit that Abusleme et al., Stoeppelmann and Krause et al. do not teach or suggest multilayer articles comprising polyamides having a content of -NH₂ end groups between 40-300 µg/g, as required by claim 10 (as claim 10 is dependent on claim 1).

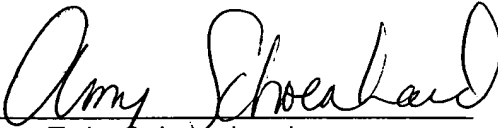
Krause et al. discloses a “fuel pipe or tube” comprising two fluoropolymers and an elastomer layer, wherein the inner fluoropolymer layer is conductive (“electrostatic discharge resistance” (Krause et al., column 2). Applicants respectfully submit that Krause et al. does not teach or suggest the presently claimed bi-layer of “A)” and “B)” formed by a particular fluoropolymer and particular polyamides without requiring additional components or post-treatment. Thus, Applicants respectfully submit that Krause et al. does not overcome the deficiencies of Abusleme et al. or Stoeppelmann.

As Abusleme et al., Stoeppelmann and Krause et al. do not teach or suggest all of the elements of claim 10 or the unexpected advantages thereof, Applicants respectfully submit that those of skill in the art would not have found claim 10 obvious over the disclosure of these references. Thus, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 10 under 35 U.S.C. § 103(a) as obvious over Abusleme et al. in view of Stoeppelmann as applied to claim 1, and further in view of Krause et al.

In view of the amendments and remarks above, Applicants respectfully submit that this application is in condition for allowance and request favorable action thereon. If the Examiner believes that anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below to schedule a personal or telephone interview to discuss any remaining issues.

In the event this paper is not considered to be timely filed, Applicants hereby petition for an appropriate extension of time. The fee for this extension may be charged to our Deposit Account No. 01-2300, referring to Attorney Docket No. 108910-00057. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 01-2300, referencing Attorney Docket No. 108910-00057.

Respectfully submitted,


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